

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE  
BOARD OF PATENT APPEALS AND INTERFERENCES**

Appellant:	Robert D. Feldman, et al.	§	
Serial No.:	10/092,746	§	Group Art Unit: 2613
Confirmation No.:	2870	§	Examiner: Wang, Quan Zhen
Filed:	March 7, 2002	§	
For:	METHOD AND APPARATUS FOR AUTOMATICALLY CONTROLLING OPTICAL SIGNAL POWER IN OPTICAL TRANSMISSION SYSTEM	§	

MAIL STOP APPEAL BRIEF - PATENTS  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

**APPEAL BRIEF**

Appellant submits this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2613 dated November 8, 2007, finally rejecting claims 1, 3-10, 12-14 and 18-20. Please charge the \$510 Appeal Brief filing fee and any other fee(s), required to make this filing timely and complete, including extension of time fees if any arise, to Deposit Account No. 20-0782/LCNT/124417.

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**Real Party in Interest**

The real party in interest is the Lucent Technologies Inc.

**Related Appeals and Interferences**

Appellant asserts that no appeals or interferences are known to the Appellant, the Appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

### **Status of Claims**

Claims 1-21 were originally presented in the application. Claims 1, 3-10, 12-14, 16 and 18-20 are pending in the application and stand rejected. Claims 1, 3-10, 12-14, 16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maddocks et al. (U.S. Patent No. 6,483,616 B1, hereinafter "Maddocks") in view of Rowley (U.S. Patent No. 4,833,668, hereinafter "Rowley"). The rejection of claims 1, 3-10, 12-14, 16 and 18-20 based on the cited references is appealed. The pending claims are shown in the attached Appendix.

**Status of Amendments**

Claim amendments proposed under 37 CFR § 1.116 after final rejection have been entered by the Examiner.

### **Summary of Claimed Subject Matter**

Various embodiments generally relate to a system for aligning a transmitter and receiver for direct, line-of-sight communications. More specifically, various embodiments include techniques and hardware configurations for utilizing a laser beam to align a wireless transmitter (i.e. transmitting antenna) and wireless receiver (i.e. transmitting antenna).

For convenience of the Board of Patent Appeals and Interferences, Appellant's independent claims 1 and 11 are presented below with citations to various figures and appropriate citations to at least one portion of the specification for elements of the appealed claims.

1. (previously presented) A method, comprising:
  - reducing the power level of an optical data signal (112) propagating in an optical fiber path (110) in response to a loss of a counter-propagating supervisory signal (114) in the optical fiber path;
  - reducing counter-propagating optical power in response to a loss of the optical data signal (page 8, lines 15-19); and
  - responsive to the loss of the optical data signal, reducing counter-propagating optical signal power output from at least one additional network element (102, 108, 116) by a predetermined amount.
10. (previously presented) A method, comprising:
  - a) detecting loss of a supervisory signal (114) counter-propagating in an optical fiber path (110) at a first network element ;
  - b) responsive to the loss of the supervisory signal in the optical fiber path, reducing the power level of an optical data signal (112) output to the optical fiber path from the first network element by a predetermined amount;
  - c) detecting loss of the optical data signal propagating in the optical fiber path at a second network element (102, 108, 116);

d) responsive to the loss of the optical data signal, reducing counter-propagating optical power output from the second network element by a predetermined amount; and

e) responsive to the loss of the optical data signal, reducing counter-propagating optical signal power output from a third network element (102, 108, 116) by a predetermined amount.

16. (previously presented) A network element adapted for use in an optical transmission system, comprising:

a first gain element (209), for providing an upstream optical signal (112) to an upstream optical fiber path (110);

a controller (202), for reducing the power level of the upstream optical signal generated by the first gain element to the upstream optical fiber path in response to the absence of a counter-propagating supervisory signal (114) in the upstream optical fiber path;

a second gain element (211), for providing a counter-propagating downstream optical signal to an downstream optical fiber path (110); and

the controller (202), for reducing the power level of the counter-propagating downstream optical signal generated by the second gain element to the downstream optical fiber path in response to the loss of an optical signal propagating in the downstream optical fiber path, wherein the controller, in response to the absence of the counter-propagating supervisory signal, provides an indication to a downstream network element that the supervisory signal is absent.

20. (previously presented) In a lightwave communication system having a plurality of network elements (102, 108, 116) for supplying an optical signal (112) adapted for transmission in an optical fiber path (110), an apparatus for controlling power of an optical signal propagating in the optical fiber path comprising:

means for detecting loss of a supervisory signal counter-propagating in the optical fiber path (page 7, lines 6-9);

a first automatic power reduction circuit (118; page 4, lines 16-18) for reducing the power level of an optical data signal output to the optical fiber path from a first network element by a predetermined amount in response to the loss of the supervisory signal in the optical fiber path (page 4, lines 26-29);

means for detecting loss of the optical data signal propagating in the optical fiber path (page 7, lines 28-32);

a second automatic power reduction circuit (118; page 4, lines 16-18) for reducing counter-propagating optical power output from a second network element by a predetermined amount in response to the loss of the optical data signal (page 8, lines 15-19); and

a controller (202), in response to the absence of the counter-propagating supervisory signal, provides an indication to a third network element that the supervisory signal is absent.

**Grounds of Rejection to be Reviewed on Appeal**

Claims 1, 3-10, 12-14, 16 and 18-20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Maddocks et al. (U.S. Patent No. 6,483,616 B1, hereinafter "Maddocks") in view of Rowley (U.S. Patent No. 4,833,668, hereinafter "Rowley").

**ARGUMENTS**

**A. 35 U.S.C. § 103(a)**

The Examiner has rejected claims 1, 3-10, 12-14, 16 and 18-20 under 35 U.S.C. 103(a) as being as being anticipated by Maddocks, et al. (U.S. Patent No. 6,483,616 B1, hereinafter "Maddocks") in view of Rowley et al. (U.S. Patent No. 4,833,668, hereinafter "Rowley"). The Appellant respectfully disagrees.

Maddocks teaches an optical communication system, wherein a traffic-carrying optical channel and a supervisory optical channel are propagated along a light guide, such that consequent to malfunction of the light guide, transmission of the traffic carrying optical channel is ceased and the supervisory optical channel is utilized to determine when the light guide is reusable for communication purposes (see Maddocks, col. 1, lines 28-36).

Rowley teaches an optical communications system wherein data is inverted prior to transmission through a light guide and reinverted after it is received. If there is a fault in the light guide, inverted data will be detected at both ends of the system and the fault is revealed (see Rowley, Abstract)

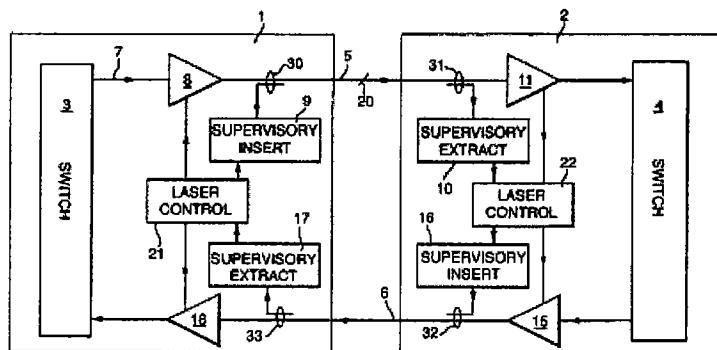
The Appellant respectfully submits that Maddocks and Rowley, either alone or in any possible combination, fails to teach or suggest each and every element of the claimed invention. Specifically, the Appellant's independent claim 1 recites:

1. A method, comprising:
  - reducing the power level of an optical data signal propagating in an optical fiber path in response to a loss of a counter-propagating supervisory signal in the optical fiber path;
  - reducing counter-propagating optical power in response to a loss of the optical data signal; and
  - responsive to the loss of the optical data signal, reducing counter-propagating optical signal power output from at least one additional network element by a predetermined amount.

The Appellant respectfully submits that neither Maddocks, Rowley nor Maddocks and Rowley in any possible combination disclose, teach or suggest at least the limitation of “reducing the power level of an optical data signal propagating in an optical fiber path in response to a loss of a counter-propagating supervisory signal in the optical fiber path.”

The Examiner asserts the claimed “counter-propagating supervisory signal” is disclosed the Maddocks Drawing. The Appellant respectfully disagrees. Maddocks does not teach a counter-propagating supervisory channel, but a co-propagating supervisory channel.

The Maddocks Drawing is displayed below in Figure 1.



**Figure 1**  
**(Maddocks Drawing)**

Referring to the Maddocks Drawing (Figure 1), the Maddocks Specification clearly describes the co-propagating nature of a supervisory signal with respect to a data signal. Describing the supervisory signal’s origination on light guide 5, Maddocks states “a relatively low power supervisory channel signal is generated at supervisory insert unit 9...and is added to the fiber 5 by optical coupler 30 (drawing; col. 2, lines 33-36). Describing the supervisory signal’s termination at the end of light guide 5, Maddocks states “at the switching unit 2, the supervisory channel is extracted by optical coupler 31 and passed to extract unit 10” (drawing; col. 2, lines 47-48). Hence, with respect to the Maddocks

drawing, the supervisory signal on light guide 5 clearly propagates from left to right.

Maddocks then explains that the data signal identically propagates left to right on light guide 5), with:

“The switch 3 generates, by means of an optical multiplexer not separately shown, a number of separate optical channels at different optical carrier wavelengths each of which carries voice and/or data traffic. These channels are sent along a common light fibre 7...to an optical amplifier 8...to the distant switching unit 2 via optical fibre 5.” (drawing, col. 2, lines 24-32)

Thus, it is evident that the supervisory channel and data signals on Maddocks' light guide 5 are traveling in the same direction (i.e. co-propagating) with respect to each other, that is they are both traveling from left to right on light guide 5.

In the exact same manner, a supervisory signal is “co-propagated” with respect to a data channel on light guide 6. Maddocks explains:

“The fibre 5 carries a unidirectional signal from switching unit 1 to switching unit 2. The similar optical fibre 6 carries a unidirectional signal from switching unit 2 to switching unit 1, and has associated with it an amplifier 15, supervisory insert unit 16, optical couplers 32 and 33, supervisory extract unit 17 and amplifiers 18 in an analogous manner.” (col 3, lines 57-62, emphasis added)

Thus, it is clear from both the Maddocks drawing and specification that the described supervisory channel is co-propagating, not “counter-propagating” with respect to a data signal as claimed.

Responding to the points of argument above, the Examiner contends

The signals on light guide 5 propagate from the left hand side to the right hand side. While the signals on light guide 6 propagate from the right hand side to the left hand side. Thus, the data signal on light guide 6 and the supervisory signal on light guide 5 also clearly propagate in opposite directions (see 1/23/08 Advisory Action).

With respect to the above, the Examiner suggests that Maddocks only differs from the claimed invention by Maddocks not specifically disclosing that a counter-propagating optical supervisory signal is propagating in the same optical fiber as the optical data signal, but it is well known to counter-propagate optical signals in the same optical fiber and thus the claimed “counter-propagating supervisory signal” somehow becomes obvious.

The Appellant respectfully disagrees with the entire basis of the Examiner's above line of argument, and submits that the points thereof do not apply to the invention as claimed. Specifically, a supervisory optical channel in Maddocks' light guide 6 can in no way be interpreted as conforming to the claimed being “in the optical path” of Maddocks' light guide 5, nor conversely a supervisory optical channel on light guide 5 as “in the optical path” of light guide 6. With respect to the claims, by not being “in the optical path,” the loss of a supervisory signal on Maddocks' light guide 5 has nothing to do with detecting a fault on light guide 6, nor does the loss of a supervisory channel on light guide 6 have anything to do with detecting a fault on light guide 5. One is not associated with the other.

Moreover, there would be positively no reason for performing the claimed “reducing the power level of an optical data signal” propagating on light guide 5 due to the loss of a supervisory channel on light guide 6, which as the specification indicates, is in one embodiment performed to prevent “retinal and other types of eye injury” (see Specification, page 1, line 10; page 4, lines 28-29) from high power lightwave transmissions in the event of a discontinuity (fault) in a light guide. The “data signal” is not “in the optical path” of the light guide that would have lost a supervisory signal.

Hence, Maddocks in no way teaches, suggests or describes the invention of the Appellants, because (1) Maddocks does not teach a “counter-propagating supervisory signal” but a co-propagating supervisory signal, (2) a supervisory signal in Maddocks light guide 5 is not “in the optical path” of light guide 6 and vice versa, and (3) the loss of a supervisory signal in one light guide in

Maddocks does not lead to the claimed “reducing the optical power level” of a data signal in the adjacent light guide, nor is there any reason why it should.

The Examiner then suggests that Rowley teaches the “counter-propagating supervisory signal.” The Applicant respectfully disagrees. There is no supervisory signal in Rowley, counter propagating or otherwise.

For performing fault detection, Rowley provides “data transmitted from one end is inverted prior to transmission and reinverted at the receiving end, while information from the other end is transmitted without inversion...if there is a break, the stations at both ends will receive inverted data and the fault is quickly revealed” (Abstract). The term *inverted* does not refer to propagation direction, but to the logic state of digitally encoded baseband data signal reversed before it is modulated and transmission. The inversion function is performed by inverter 10 (Figure 2).

Rowley’s “supervisory and error detector circuits” (fig. 2) reside after receivers 15 and 15’, functioning fully in the digital domain, and digitally monitoring for discrepancies *only* in the encoded data signal. Once received (i.e. demodulated) by receiver 15’, a signal transmitted by transmitter 14 is inverted again (i.e. restored to its pre-inverted state after having been inverted by inverter 10) by inverter 11. Were there a break in the transmission line 3, both supervisory and error detector circuits 16 and 16’ would receive inverted data from transmitters 14 and 14’ reflected back from the break point, indicative of a fault. Fault detection is predicated entirely on examining the baseband of the communicated signal (i.e. from transmitters 14 and 14’ alone), not from a separate “supervisory signal.”

Hence, Rowley in no way teaches, suggests or describes the invention of the invention, because Rowley does not teach any type of supervisory channel at all, much less the claimed “counter-propagating supervisory channel.”

Thus, Maddocks and Rowley clearly fail to teach at least the claim element “reducing the power level of an optical data signal propagating in an optical fiber path in response to a loss of a counter-propagating supervisory signal in the optical fiber path.”

Therefore, the Appellant submits that claim 1 is not anticipated by the teachings of Maddocks and Rowley, and, as such, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

Likewise, independent claims 10, 16 and 20 recites similar relevant features as recited in claim 1. As such, and for at least the reasons stated herein, the Appellant submits that independent claims 10, 16 and 20 are also not anticipated by the requirements of 35 U.S.C. § 103 and is patentable thereunder.

Furthermore, dependent claims 3-9, 12-14 and 18-20 depend directly from independent claims 1, 10, 16 and 20, and recite additional features therefore. As such, and for at least the reasons set forth herein, the Appellant submits that dependent claims 3-9, 12-14 and 18-20 are also not anticipated by the teachings of Maddocks and Rowley. Therefore, the Appellant submits that dependent claims 3-9, 12-14 and 18-20 fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

**CONCLUSION**

Thus, the Appellant submits that none of the claims presently in the application are obvious under the respective provisions of 35 U.S.C. §103. Consequently, the Appellant believes all these claims are presently in condition for allowance.

For the reasons advanced above, Appellant respectfully urges that the rejections of claims 1-9, 11-13, 15 and 20-21 as being anticipated and obvious under the respective provisions of 35 U.S.C. §102 and §103 are improper. Reversal of the rejections of the Final Office Action is respectfully requested.

Respectfully submitted,

3/24/08  
Date



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## CLAIMS APPENDIX

1. (previously presented) A method, comprising:
  - reducing the power level of an optical data signal propagating in an optical fiber path in response to a loss of a counter-propagating supervisory signal in the optical fiber path;
  - reducing counter-propagating optical power in response to a loss of the optical data signal; and
  - responsive to the loss of the optical data signal, reducing counter-propagating optical signal power output from at least one additional network element by a predetermined amount.
2. (canceled)
3. (previously presented) The method of claim 1, wherein the step of reducing the power level of the optical data signal and the step of reducing counter-propagating optical power are performed substantially at the same time.
4. (previously presented) The method of claim 1, wherein the step of reducing the power level of the optical data signal comprises at least one of:
  - reducing pump power supplied by at least one pump source coupled to the optical fiber path; and
  - reducing gain supplied by at least one optical amplifier coupled to the optical fiber path.
5. (previously presented) The method of claim 4, wherein the step of reducing the counter-propagating optical power comprises reducing counter-propagating pump power supplied by at least one pump source coupled to the optical fiber path.

6. (previously presented) The method of claim 1, wherein the power level of the optical data signal is reduced by a predetermined amount such that harm from an optical signal emanating from a fault in the optical fiber path is substantially reduced.
7. (previously presented) The method of claim 1, wherein the counter-propagating optical power is reduced by a predetermined amount such that harm from an optical signal emanating from a fault in the optical fiber path is substantially reduced.
8. (previously presented) The method of claim 1, further comprising the step of restoring the power level of the optical data signal in response to the presence of the counter-propagating supervisory signal.
9. (previously presented) The method of claim 1, further comprising the step of restoring the counter-propagating optical power in response to a notification of the presence of the counter-propagating supervisory signal.
10. (previously presented) A method, comprising:
  - a) detecting loss of a supervisory signal counter-propagating in an optical fiber path at a first network element;
  - b) responsive to the loss of the supervisory signal in the optical fiber path, reducing the power level of an optical data signal output to the optical fiber path from the first network element by a predetermined amount;
  - c) detecting loss of the optical data signal propagating in the optical fiber path at a second network element;
  - d) responsive to the loss of the optical data signal, reducing counter-propagating optical power output from the second network element by a predetermined amount; and

e) responsive to the loss of the optical data signal, reducing counter-propagating optical signal power output from a third network element by a predetermined amount.

11. (canceled)

12. (previously presented) The method of claim 10, wherein the steps b) and d) are performed substantially at the same time.

13. (original) The method of claim 10, wherein step b) comprises at least one of:

reducing pump power supplied by at least one pump source coupled to the optical fiber path in the first network element; and

reducing gain of at least one optical amplifier coupled to the optical fiber path in the first network element.

14. (previously presented) The method of claim 10, wherein step d) comprises reducing counter-propagating pump power supplied by at least one pump source coupled to the optical fiber path in the second network element.

15. (canceled)

16. (previously presented) A network element adapted for use in an optical transmission system, comprising:

a first gain element, for providing an upstream optical signal to an upstream optical fiber path;

a controller, for reducing the power level of the upstream optical signal generated by the first gain element to the upstream optical fiber path in response to the absence of a counter-propagating supervisory signal in the upstream optical fiber path;

a second gain element, for providing a counter-propagating downstream optical signal to an downstream optical fiber path; and

the controller, for reducing the power level of the counter-propagating downstream optical signal generated by the second gain element to the downstream optical fiber path in response to the loss of an optical signal propagating in the downstream optical fiber path, wherein the controller, in response to the absence of the counter-propagating supervisory signal, provides an indication to a downstream network element that the supervisory signal is absent.

17. (canceled)
18. (original) The network element of claim 16, wherein the network element comprises a repeater.
19. (original) The network element of claim 18, wherein the at least one gain element comprises at least one of an optical amplifier and a pump source.

20. (previously presented) In a lightwave communication system having a plurality of network elements for supplying an optical signal adapted for transmission in an optical fiber path, an apparatus for controlling power of an optical signal propagating in the optical fiber path comprising:

means for detecting loss of a supervisory signal counter-propagating in the optical fiber path;

a first automatic power reduction circuit for reducing the power level of an optical data signal output to the optical fiber path from a first network element by a predetermined amount in response to the loss of the supervisory signal in the optical fiber path;

means for detecting loss of the optical data signal propagating in the optical fiber path;

a second automatic power reduction circuit for reducing counter-propagating optical power output from a second network element by a predetermined amount in response to the loss of the optical data signal; and

a controller, in response to the absence of the counter-propagating supervisory signal, provides an indication to a third network element that the supervisory signal is absent.

21. (canceled)

## **EVIDENCE APPENDIX**

None

**RELATED PROCEEDINGS APPENDIX**

None.